F6 | =$C$9+$C$8*E6+0.5*$C$7*E6^2

	A	B	C	D	E	F
1	Position as a function of time (t), for linear, translational, constantly accelerated motion.					
2	x=	(1/2)*a*t^2 + v_i*t + x_i				
3						
4	EXAMPLE: enter values in green				t	x
5	t	time	indep variable		(units of time)	(units of position)
6	x	position at time t	dep variable		0	50
7	a	acceleration	16		2	92
8	v_i	initial velocity	5		4	198
9	x_i	initial position	50		6	368
10					8	602
11					10	900

Figure 237: Setting up a formula with arguments

You can take several broad approaches when creating a formula. In deciding which approach to take, consider how many other people will need to use the sheets, the life of the sheets, and the variations that could be encountered in use of the formula.

If people other than yourself will use the spreadsheet, make sure that it is easy to see what input is required and where. Explanation of the purpose of the spreadsheet, basis of calculation, input required and output generated are often placed on the first sheet.

A spreadsheet that you build today, with many complicated formulas, may not be quite so obvious in its function and operation in 6 or 12 months. Use comments and notes liberally to document your work.

You might be aware that you cannot use negative values or zero values for a particular argument, but if someone else inputs such a value, will your formula be robust or simply return a standard (and often not too helpful) error message? It is a good idea to trap errors using some form of logic statements or with conditional formatting.

Place a unique formula in each cell

The most basic strategy is to view whatever formulas are needed as simple and with a limited useful life. The strategy is then to place a unique formula in each appropriate cell. This can be recommended only for very simple or “throw away” (single use) spreadsheets.

Break formulas into parts and combine the parts

The second strategy is similar to the first, but instead you break down longer formulas into smaller parts and then combine the parts into the whole. Many examples of this type exist in complex scientific and engineering calculations where interim results are used in a number of places in the sheet. The result of calculating the flow velocity of water in a pipe may be used in estimating losses due to friction, whether the pipe is flowing full or partially empty, and in optimizing the diameter for the given flow regime.

In all cases you should adopt the basic principles of formula creation described previously.

Speeding up calculations

Spreadsheets are often used to process raw data and produce meaningful summaries, consolidation and display of information for the decision maker, or to be used as the source for reports. The raw data can be produced by physical measurements, business transactions, or various other means. Sheets with thousands or even hundreds of thousands of rows and several columns are frequently found in finance departments or laboratories. Computations carried out on these raw data sets can be time consuming and last for minutes, hours and perhaps, days.

A common mistake is to insert formulas for each cell and perform thousands of formula interpretations and calculations. Here are some recommendation for speeding up calculations.